

What is claimed is:

1. A radio transmission apparatus comprising:

first spreading means for spreading a pilot signal;

superimposing means for superimposing the spread  
5 pilot signal on transmission data; and

transmitting means for transmitting the output  
signal of this superimposing means by time division or  
frequency division.

2. The radio transmission apparatus according to claim  
10 1, wherein the transmitting means transmits a signal  
resulting from multiplexing signals of a plurality of  
channels from one transmission antenna.

3. A radio reception apparatus comprising:

receiving means for receiving a signal transmitted  
15 from the radio transmission apparatus according to claim  
1; and

despreading means for extracting a pilot signal by  
despreading the output signal of this receiving means.

4. The radio reception apparatus according to claim 3,  
20 further comprising channel estimating means for  
performing a channel estimation using the pilot signal.

5. The radio reception apparatus according to claim 3,  
further comprising distance estimating means for  
performing a distance estimation using the pilot signal.

25 6. The radio reception apparatus according to claim 3,  
further comprising:

second spreading means for spreading the pilot  
signal output from the despreading means; and

eliminating means for subtracting the output pilot signal of said second spreading means from the output signal of the receiving means.

7. A radio communication terminal apparatus equipped  
5 with a radio transmission apparatus, said radio transmission apparatus comprising:

first spreading means for spreading a pilot signal;  
superimposing means for superimposing the spread pilot signal on transmission data; and

10 transmitting means for transmitting the output signal of this superimposing means by time division or frequency division.

8. A radio communication terminal apparatus equipped  
15 with a radio reception apparatus, said radio reception apparatus comprising:

receiving means for receiving a signal transmitted from the radio transmission apparatus according to claim 1; and

despreading means for extracting a pilot signal by  
20 despreading the output signal of this receiving means.

9. A radio communication base station apparatus equipped  
with a radio transmission apparatus, said radio transmission apparatus comprising:

25 first spreading means for spreading a pilot signal;  
superimposing means for superimposing the spread pilot signal on transmission data; and

transmitting means for transmitting the output signal of this superimposing means by time division or

frequency division.

10. A radio communication base station apparatus equipped with a radio reception apparatus, said radio reception apparatus comprising:

5       receiving means for receiving a signal transmitted from the radio transmission apparatus according to claim 1; and

      despreading means for extracting a pilot signal by despreading the output signal of this receiving means.

10 11. A radio communication method comprising steps of:  
      spreading a pilot signal, superimposing the spread pilot signal on transmission data and transmitting the superimposed signal by time division or frequency division on a transmitting side; and

15       despreading the reception signal and extracting the pilot signal on a receiving side.